

CLAIMS

1. An elevator hoist apparatus comprising:
a stationary frame member;
a main shaft;
a stationary element disposed to said stationary frame member;
a rotary frame member supported on said main shaft and extending in a radial direction in axial opposition to said stationary frame member;
a rotary element disposed to said rotary frame member in opposition to said stationary member;
a brake unit including a brake portion extending through an opening in said stationary frame member; and
a rope sheave disposed to said rotary frame member for rotation therewith.

2. An elevator hoist apparatus comprising:
a stationary frame member;
a main shaft;
a stationary element disposed to said stationary frame member;
a rotary frame member supported on said main shaft and extending in a radial direction in axial opposition to said stationary frame member;
a rotary element disposed to said rotary frame member in opposition to said stationary member;
a brake unit disposed on an inner circumference of said stationary frame member and said rotary element; and
a rope sheave disposed to said rotary frame member for rotation therewith.

3. An elevator hoist apparatus comprising:
a stationary frame member;
a main shaft;
a stationary element disposed to said stationary frame member;
a rotary frame member supported on said main shaft and extending in a

radial direction in axial opposition to said stationary frame member;

a rotary element disposed to said rotary frame member in opposition to said stationary member; and

a brake unit including a brake portion extending through an opening in said stationary frame member.

4. An elevator hoist apparatus comprising:

a stationary frame member;

a main shaft;

a stationary element disposed to said stationary frame member;

a rotary frame member supported on said main shaft and extending in a radial direction in axial opposition to said stationary frame member;

a rotary element disposed to said rotary frame member in opposition to said stationary member; and

a brake unit disposed on an inner circumference of said stationary frame member and said rotary element.

5. An elevator hoist apparatus comprising:

a stationary frame member;

a main shaft;

a stationary element disposed to said stationary frame member;

a rotary frame member supported on said main shaft and extending in a radial direction in axial opposition to said stationary frame member;

a rotary element disposed to said rotary frame member in opposition to said stationary member; and

a brake unit including an electromagnetic coil and for braking said rotary element;

one portion of said rotary frame member or said stationary frame member defines one portion of a magnetic path for said electromagnetic coil of said brake unit.

6. An elevator hoist apparatus comprising:

a stationary frame member of a cylindrical shape including a hollow portion;

- a main shaft;
- a stationary element disposed to said stationary frame member;
- a rotary frame member supported on said main shaft and extending in a radial direction in axial opposition to said stationary frame member;
- a rotary element disposed to said rotary frame member in opposition to said stationary member;
- a brake unit disposed to the hollow portion of said stationary frame member; and
- a rope sheave disposed to said rotary frame member for rotation therewith.

7. An elevator hoist apparatus comprising:

- a stationary frame member of a cylindrical shape including a hollow portion;
- a main shaft;
- a stationary element disposed to said stationary frame member;
- a rotary frame member supported on said main shaft and extending in a radial direction in axial opposition to said stationary frame member;
- a rotary element disposed to said rotary frame member in opposition to said stationary member;
- a brake unit attached to said main shaft or said stationary frame member and disposed in the inner circumferential portion of said stationary frame member; and
- a rope sheave disposed to said rotary frame member for rotation therewith.

8. An elevator hoist apparatus comprising:

- a stationary frame member;
- a main shaft;
- a stationary element disposed to said stationary frame member;
- a rotary frame member supported on said main shaft and extending in a radial direction in axial opposition to said stationary frame member;
- a rotary element disposed to said rotary frame member in opposition to said stationary member;

a brake unit attached to said stationary frame member or said main shaft; and

a rope sheave disposed to said rotary frame member for rotation therewith;

said stationary frame member being disposed between said brake unit and said rope sheave in the direction of the axis of said main shaft.

9. An elevator hoist apparatus as claimed in any one of claims 1, 2 and 6-8, wherein said main shaft extends in a cantilever manner from said stationary frame member or said brake unit for pivotally supporting said rotary frame member.

10. An elevator hoist apparatus as claimed in any one of claims 1, 2 and 6-8, wherein said main shaft extends in a cantilever manner from said rotary frame member to said stationary frame and supported from said stationary frame member via a bearing.

11. An elevator hoist apparatus as claimed in any one of claims 1, 2 and 6-8, further comprising a stationary element mounting portion supported from said stationary frame member;

said stationary element mounting portion being an annular member having an L-shaped cross section and including an annular plate portion disposed at the outer circumferential portion of said stationary frame member and radially extending from said stationary frame member; and a cylindrical portion axially extending from said annular plate portion.

12. An elevator hoist apparatus as claimed in any one of claims 1, 2 and 6-8, further comprising a stationary element mounting portion supported from said stationary frame member;

said stationary frame member including a radial portion extending in a radial direction and supporting said main shaft and a stationary frame member cylindrical portion axially extending from said radial portion;

said stationary frame member cylindrical portion and said stationary element mounting portion having an L-shaped cross section together

constituting a U-shaped cross section portion.

13. An elevator hoist apparatus as claimed in any one of claims 1, 2 and 6-8, further comprising a stationary element mounting portion supported from said stationary frame member;

said stationary frame member including a radial portion extending in a radial direction and supporting said main shaft and a stationary frame member cylindrical portion axially extending from said radial portion;

said stationary element mounting portion being disposed so that said stationary element mounting portion extends radially outwardly from said stationary frame member cylindrical portion.

14. An elevator hoist apparatus as claimed in any one of claims 1, 2 and 6-8, further comprising a stationary element mounting portion supported from said stationary frame member;

said stationary frame member including a radial portion extending in a radial direction and supporting said main shaft and a stationary frame member cylindrical portion axially extending from said radial portion;

said stationary element mounting portion being disposed radially inwardly of said stationary frame member cylindrical portion.

15. An elevator hoist apparatus as claimed in any one of claims 1, 2 and 6-8, further comprising a stationary element mounting portion supported from said stationary frame member and a rotary element mounting portion supported from said rotary frame member;

said rotary member being disposed in an axial opposition to said stationary member.

16. An elevator hoist apparatus as claimed in any one of claims 12, wherein said brake unit is disposed axially outwardly of said stationary frame member cylindrical portion.

17. An elevator hoist apparatus as claimed in any one of claims 16, wherein said stationary frame member cylindrical portion of said stationary

frame member is disposed radially outwardly of said stationary element mounting portion.

18. An elevator hoist apparatus as claimed in any one of claims 9, wherein said main shaft and said stationary frame member are structured into an integral, single piece member continuous to each other.

19. An elevator hoist apparatus as claimed in any one of claims 10, wherein said main shaft and said rotary frame member are structured into an integral, single piece member continuous to each other.

20. An elevator hoist apparatus as claimed in any one of claims 1, 2 and 6-8, wherein said brake unit is disposed within axial dimensions of said stationary element mounting portion of said stationary frame member or said rotary element mounting portion of said rotary frame member.

21. An elevator hoist apparatus as claimed in any one of claims 1, 2 and 6-8, wherein said brake unit is in direct opposition to said rotary frame member.

22. An elevator hoist apparatus as claimed in any one of claims 1, 2 and 6-8, wherein a brake frame of said brake unit is made an integral portion continuous to said stationary frame member.

23. An elevator hoist apparatus as claimed in any one of claims 1, 2 and 6-8, wherein a direction of assembly of said brake unit into said stationary frame member and a direction of assembly of said brake unit into said stationary frame member are identical.

24. An elevator hoist apparatus as claimed in any one of claims 3-5, wherein said brake unit, said main shaft or said stationary frame member have an encoder accommodated therein, and a rotary shaft for the encoder mounted to said rotary frame member extends through said main shaft or said brake unit for transmitting a rotary signal to said encoder.

25. An elevator hoist apparatus as claimed in any one of claims 3-5, wherein a seal mechanism for preventing leakage of oil within a bearing between said stationary frame member and said rotary frame member is disposed between said brake unit and said bearing.

26. An elevator hoist apparatus as claimed in any one of claims 3-5, wherein a drain port for draining oil leaked from a bearing between said stationary frame member and said rotary frame member or an inspection hole for inspecting the oil leakage is provided.

27. An elevator hoist apparatus as claimed in any one of claims 3-5, wherein a width dimension of a permanent magnet constituting said rotary member in the direction of hoist apparatus shaft is greater than a width dimension of a core of said stationary member in the direction of hoist apparatus shaft.

28. An elevator hoist apparatus as claimed in any one of claims 3-5, wherein a drain port for draining oil leaked from a bearing between said stationary frame member and said rotary frame member or an inspection hole for inspecting the oil leakage is provided.